

PATENT APPLICATION
PO-7978
LeA 36,317

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION OF)	
MARTIN MELCHORS ET AL)	GROUP NO.: 1796
SERIAL NUMBER: 10/784,319)	
FILED: FEBRUARY 20, 2004)	EXAMINER: K. C. EGWIM
TITLE: AQUEOUS COATING)	
COMPOSITIONS BASED ON)	CONFIRMATION NO.: 2166
PU-PAC HYBRID DISPERSIONS)	

**APPEAL BRIEF
UNDER 37 C.F.R. §1.192**

Commissioner for Patents
Alexandria, VA 22313-1450

Sir:

This Brief is in support of an appeal from the Final Office Action of the Examiner dated August 25, 2009, in which the rejection of Claims 1, 3-5 and 12-14 was maintained. A Notice of Appeal was filed on November 20, 2009. A Petition for Extension of Time is being filed simultaneously herewith.

I. REAL PARTY IN INTEREST

This application is assigned to Bayer MaterialScience AG.

II. RELATED APPEALS AND INTERFERENCES

There are no interferences or other judicial proceedings which Appellants are aware of that may be related to, would directly affect, would be directly affected by or have a bearing on the Board's decision in the present appeal.

III. STATUS OF CLAIMS

The above-referenced application was filed with Claims 1-14.

Claims 1, 3-5 and 12-14 are pending but stand rejected. Claims 2 and 6-11 have been withdrawn. Claims 1, 3-5 and 12-14 are the subject claims of this appeal.

IV. STATUS OF AMENDMENTS

No amendments were filed by Appellants after final rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Of pending Claims on Appeal, Claim 1 is the only independent claim. Claims 3-5 and 12-14 are dependent directly or indirectly on Claim 1. Claim 1 is directed to a method of producing aqueous, emulsifier-free and solvent-free polyurethane-polyacrylate hybrid secondary dispersions. This method of producing polyurethane-polyacrylate hybrid dispersions comprises preparing an isocyanate group-free, thiol group-free polyurethane by reacting a polyisocyanate component with an isocyanate-reactive component. (See page 6, line 15 – page 7, line 3 of the Specification). The reaction of the two components may take place in the presence of ethylenically unsaturated monomers which are inert towards NCO groups. (See page 3, line 29- page 4, line 2 of the Specification). The isocyanate-reactive component consists of at least one of (A2) polyols or polyamines, (A3) compounds having at least one ionic or potentially ionic group, (A4) low molecular weight di- or polyols or di- or polyamines, and (A5) monoalcohols or monoamines. (See page 6, line 15 – page 7, line 3 of the Specification). The method further comprises subsequently adding unsaturated monomers to the isocyanate group-free, thiol group-free polyurethane and subjecting the mixture to free-radical polymerization. (See page 4, lines 4 - 16 of the Specification). Finally, the polymer is optionally neutralized and dispersed in the aqueous phase. (See page 4, lines 11 - 16 of the Specification)

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether Claims 1, 3-5 and 12-14 are unpatentable under 35 U.S.C. §112, first paragraph as failing to comply with the written description requirement.

Whether Claims 1, 3-5 and 12-14 are unpatentable under 35 U.S.C. §102(b) as being anticipated by WO 2001/77200 ("Kagerer").

VII. ARGUMENTS

CLAIMS 1, 3-5 AND 12-14 SATISFY THE WRITTEN DESCRIPTION REQUIREMENT UNDER 35 U.S.C. § 112, FIRST PARAGRAPH.

Claim 1 requires preparing an isocyanate group-free, thiol group-free polyurethane as the first step in the process. The Examiner indicates the limitation "thiol group-free" constitutes new matter." See Final Office Action of August 25, 2009.

A description as filed is presumed to be adequate, unless or until sufficient evidence or reasoning to the contrary has been presented by the Examiner to rebut the presumption. See *e.g.*, *In re Marzocchi*, 439 F.2d 220, 224, 169 USPQ 367, 370 (CCPA 1971); See also MPEP 2163.04. The Examiner has the burden of providing evidence of why a particular claim does not meet the written description requirement.

In the present case, Appellants have previously set forth support for all of the limitations regarding the components used in the preparation of polyurethane A). Namely, components (A2) and (A4) exclusively contain isocyanate-reactive groups selected from the group consisting of –OH and –NH groups. Support for the limitation is found in the specification at page 7, line 31 through page 10, line 11, in particular at page 8, lines 2-4 and 14-16, wherein only –OH or –NH groups are disclosed as suitable isocyanate-reactive groups.

Additional support for this limitation is found in the examples of suitable compounds for use as component (A2) wherein only compounds containing –OH or –NH groups are disclosed as being suitable. Component (A2) still covers all of the disclosed polyamines and polyols such as those set forth at page 8, lines 5-9, *e.g.*, polyether polyols, polyester polyols, polycarbonate polyols, polyester carbonate polyols, polyester amide polyols, polyamide polyols, epoxy resin polyols and their reaction products with CO₂, poly(meth)acrylate polyols, polyacetal polyols, saturated and unsaturated, unfluorinated and fluorinated hydrocarbon polyols and polysiloxane polyols.

Support for the limitation is also found in the specification at page 11, line 22 through page 13, line 11, wherein only compounds containing –OH or –NH groups are disclosed as being suitable for use as component (A4).

Appellants respectfully submit it is clear from the specification the limitation “thiol-free” is inherent in the Appellants’ disclosure. Thiols are well known reactive partners for isocyanates. However, despite the extensive list of acceptable reaction partners provided by Appellants in the Specification, thiols were not included as acceptable. Further, it is clear from the restrictive language used in defining components (A2) to (A5), only –OH or –NH groups were intended to react with the isocyanate groups, thus leading to a thiol-free polyurethane.

As such, Appellants respectfully request that Claims 1, 3-5 and 12-14 satisfy the written description requirement under 35 U.S.C. §112, first paragraph.

CLAIMS 1, 3-5 AND 12-14 ARE NOT ANTICIPATED UNDER 35 U.S.C. § 102(b) BY THE KAGERER REFERENCE (WO 2001/77200).

Kagerer discloses preparing a graft copolymer based on polyurethane that is prepared by graft copolymerizing at least one hydrophobic or hydrophilic polyurethane with at least one olefinically unsaturated monomer, in solution or in an aqueous medium. See page 2, paragraph 0023. It is an essential requirement of the teachings of Kagerer that the polyurethane contains on average at least one thiol group. See *id.* The polyurethane is prepared by reacting an isocyanate-functional prepolymer with at least one polythiol. See page 3, paragraph 0047.


In order to anticipate a claim under 35 U.S.C. § 102(b), a prior art reference must disclose every limitation of the claim. The claims of the present application require (I) preparing an isocyanate group-free, thiol group-free polyurethane . . . in non-aqueous solution, by reacting . . . the isocyanate groups of polyisocyanates with the isocyanate-reactive groups of an isocyanate-reactive component consisting of at least one compound selected from [compounds exclusively containing isocyanate-reactive groups selected from the group consisting of –OH and –NH groups], (II) adding to the isocyanate group-free, thiol group-free polyurethane solution (A), one or more vinylically unsaturated monomers (B) . . . and subjecting the resultant mixture to free-radical polymerization . . . , (III) optionally neutralizing . . . and (IV) dispersing the hybrid polymer in the aqueous phase . . . (*emphasis added*).

Kagerer is very clear that the polyurethanes that are added to the olefinically unsaturated monomer must contain at least one thiol group. See e.g., page 6, paragraphs 0093 and 0094 ("The polyurethanes containing thiol groups are used to prepare the graft copolymers of the invention. For this purpose, the polyurethanes containing thiol groups are grafted in organic solution or in a dispersion with at least one monomer (a)."). The Examiner has contended that Kagerer teaches intermediate polyurethanes containing no thiol groups. See Final Office Action of September 22, 2006, Paragraph 6. However, such intermediates are not added to the olefinically unsaturated monomer. Instead, they are further reacted to impart thiol functionality to the polyurethane prior to its addition to the monomer.

Thus, Kagerer does not teach adding a monomer to a thiol-free polyurethane, as required by the present claims. As Kagerer does not disclose all of the limitations of the claimed invention, the claims cannot be anticipated by Kagerer. Appellants respectfully submit that this reference does not properly render the presently claimed invention unpatentable under 35 U.S.C. §102(b).

In view of the preceding arguments, Appellants respectfully submit that each of the Examiner's rejections is in error and respectfully request that the rejections be reversed. The allowance of Claims 1, 3-5 and 12-14 is respectfully requested.

Respectfully submitted,

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VIII. CLAIMS APPENDIX:

The following is a listing of the Claims on Appeal.

Claim 1. A process for preparing polyurethane-polyacrylate hybrid secondary dispersions, comprising

- (I) preparing an isocyanate group-free, thiol group-free polyurethane (A) having an average molecular weight M_n of from 1,100 to 10,000, which contains no polymerizable double bonds, in non-aqueous solution, by reacting
 - (A1) the isocyanate groups of polyisocyanates with the isocyanate-reactive groups of an isocyanate-reactive component consisting of at least one compound selected from
 - (A2) polyols and/or polyamines having an average molecular weight, M_n , of at least 400 and exclusively containing isocyanate-reactive groups selected from the group consisting of $-OH$ and $-NH$ groups,
 - (A3) compounds containing at least one ionic or potential ionic group and at least one other isocyanate-reactive group which are selected from mono- and dihydroxy carboxylic acids, mono- and diamino carboxylic acids, mono- and dihydroxy sulphonic acids, mono- and diamino sulphonic acids, mono- and dihydroxy phosphonic acids and mono- and diamino phosphonic acids; salts of the preceding acids; and N-methyl diethanolamine; and nonionical hydrophilic compounds containing at least one isocyanate-reactive group, which are selected from polyoxyalkylene ethers containing at least one hydroxyl or amino group,
 - (A4) compounds which are different from (A3) and (A5), have a molecular weight, M_n , of less than 400, exclusively contain isocyanate-reactive groups selected from the group consisting of $-OH$ and $-NH$ groups, and are selected from alkane diols, alkane polyols, ether diols, ester diols, diamines and polyamines, and
 - (A5) monofunctional, isocyanate-reactive compounds which are selected from monoamines and monoalcohols; and compounds which contain active hydrogen having different reactivity to isocyanate groups

which are selected from compounds containing primary and secondary amino groups and compounds containing hydroxyl and amino groups, optionally in the presence of vinylically unsaturated monomers which carry no groups that are reactive towards isocyanate groups,

- (II) adding to the isocyanate group-free, thiol group-free polyurethane solution (A), one or more vinylically unsaturated monomers (B) comprising a member selected from the group consisting of
 - (B1) acid-functional monomers,
 - (B2) hydroxyl- and/or amino-functional monomers,
 - (B3) monomers other than (B1) and (B2),and subjecting the resultant mixture to free-radical polymerization in a homogeneous, non-aqueous phase to provide a hybrid polymer,
- (III) optionally neutralizing at least some of any potential ionic groups introduced via component (A3), and
- (IV) dispersing the hybrid polymer into the aqueous phase, wherein the neutralization can take place before or after the vinyl polymerization or during the dispersing step.

Claim 3. The process according to Claim 1, wherein the free-radical polymerization is conducted such that at the end the fraction of the acid-functional monomers in the monomer mixture is higher than at the beginning.

Claim 4. A polyurethane-polyacrylate hybrid secondary dispersions obtained according to the process of Claim 1.

Claim 5. The polyurethane-polyacrylate hybrid secondary dispersions according to Claim 4, wherein the hybrid polymer contains hydroxyl groups both in the polyurethane fraction (A) and in the vinylically unsaturated monomers fraction (B).

Claim 12. The polyurethane-polyacrylate hybrid secondary dispersions according to Claim 5, wherein vinylically unsaturated monomers (B) comprise polyacrylates.

Claim 13. The process according to Claim 1, wherein the preparation of polyurethane (A) involves more than one reaction step.

Claim 14. The process according to Claim 13, wherein polyurethane (A) is prepared by forming an NCO-functional prepolymer, and subsequently reacting the free isocyanate groups of the NCO-functional prepolymer exclusively with the isocyanate-reactive groups of at least one isocyanate-reactive component consisting of at least one compound selected from (A2)-(A5).

IX. EVIDENCE APPENDIX:

None submitted.

X. RELATED PROCEEDINGS APPENDIX:

Appellants are unaware of any interferences or other judicial proceedings which Appellants are aware of that may be related to, would directly affect, would be directly affected by or have a bearing on the Board's decision in the present appeal. Accordingly, there is nothing to submit under this section.